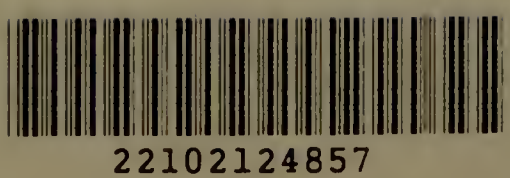
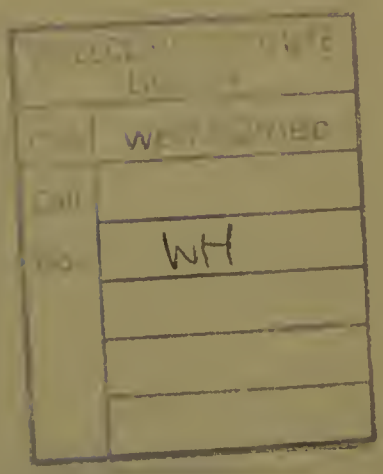
ON SPLENIC ANEMIA


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ON SPLENIC ANÆMIA.

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Under the names of splenic pseudoleukæmia, anæmia splenica, lymphadénie splénique, and the splenic form of Hodgkin's disease is described an idiopathic enlargement of the spleen with anæmia. I prefer the name splenic anæmia, which indicates the two essential features.

From Griesinger's clinic, in 1866, Gretzel[1] described a case of enlargement of the spleen with anæmia in a child of ten months. Griesinger, who termed the condition anæmia spleniea, had many such cases in adults which had terminated fatally. He recognized the condition as a non-leukæmie counterpart of the ordinary splenic leukæmia.

In 1871, H. C. Wood,[2] of Philadelphia, in a paper on the relations of leukæmia and pseudoleukæmia, brought the subject to the notice of the profession in this country. After speaking of the two forms of the latter, in which the lymphatics are involved alone, or the lymphatics with the spleen, he says: "I now desire to show that there is still a third form of pseudoleukæmia—a splenic variety. Under the names of tumor of the spleen, splenic eachexia, etc., from time far back, medical records furnish accounts of cases which I believe represent this affection." The case which he reported was very characteristic; the spleen was enormously enlarged and the anæmia extreme, without any increase in the leucocytes. Usually described with Hodgkin's disease or pseudoleukæmia, splenic anæmia has not received until lately widespread recognition. Thus while familiar with the papers of Wood, Strümpell and others, and although I had had cases under my care, I did not discuss the diseases in a separate section in Pepper's *System of Medicine*, 1885, vol. iii., but only referred to it under the differential diagnosis in pernicious anæmia and in leukæmia. The critical summary of the literature, by Dr. Sippy, in the November number of this Journal (in which, by the way, Dr. Wood's paper is overlooked) makes superfluous any additional references to the literature of the subject. I give here, as briefly as possible, my experience with this condition, limiting the cases strictly to those which have presented a primitive splenomegaly and anæmia without enlargement of the lymph-glands.

[1] Berliner klinische Wochenschrift, Band iii.
[2] The American Journal of the Medical Sciences.

I purposely have not spoken of anæmia with enlarged spleen in very young children, a subject which requires separate consideration.

Case I. *Malaria in India some years previously; no syphilis; recurring attacks of hemorrhage from the stomach; enlarged spleen; progressive anæmia; ascites; death from hæmatemesis.*—This patient, a man, aged thirty-six years, was admitted to the Montreal General Hospital, September 2, 1879, with anæmia. He had a very much enlarged spleen, which extended to the navel, and the lower edge was below the transverse navel line. There was no enlargement of the lymph-glands. The red blood-corpuscles were under 2,000,000 per c.mm. The hæmoglobin unfortunately was not estimated. There was no leukæmia. He had served with the army in India, and had had intermittent fever. He had had recurring attacks of hæmatemesis. Two months before admission he began to have dropsy of the legs and abdomen.

Case II. *Severe hæmatemesis at the ninth year, again at the eleventh year; anæmia; swelling of the feet; enlarged spleen.*—Girl, aged eleven years, seen August 13, 1879. Two years before she had had a very severe hemorrhage from the stomach, from which she recovered, though she remained somewhat pale. A month before I saw her she had a second attack, in which she lost, the mother said, nearly three quarts of blood in thirty-six hours. She was very anæmic. The red blood-corpuscles were 2,250,000; leucocytes, 7120 per c.mm.

These two cases were reported in full in the *Canada Medical and Surgical Journal*, vol. xi.

Case III. *Recurring attacks of hæmatemesis and melæna between* 1885 *and* 1897; *excellent health in the intervals; chronic enlargement of the spleen; death in an attack. Anatomical summary: Chronic hyperplasia of the spleen; liver smooth, macroscopically showing no signs of cirrhosis; microscopically showing only fatty changes.*—W. M., aged thirty-five years, seen on December 9, 1892, complaining of hemorrhage from the bowels. This patient was very anæmic after each hemorrhage. When I saw him first he was only slightly anæmic. The blood was examined, but unfortunately the slip with the count was mislaid. There was no leucocytosis, no enlargement of the lymph-glands.

Case IV. *No history of malaria or of syphilis; nearly ten years ago first attack of hæmatemesis; since then, at intervals of about a year, very severe attacks, in which he vomited blood and passed blood in the stools; enlarged spleen; exploratory laparotomy; stomach and duodenum normal; liver smooth, not cirrhotic; removal of enlarged spleen; recovery.*—C. D. B., aged thirty-three years, of Fincastle, Va., farmer, admitted on March 9, 1898, complaining of hemorrhages from the stomach and bowels, and pain, with enlargement in the left side of the abdomen. On his first admission, four months after the last hemorrhage, the red blood-corpuscles were 3,000,000, the leucocytes 2800 per c.mm., and hæmoglobin 25 per cent. Differential count: polymorphonuclears, 84.4 per cent.; small mononuclears, 4.4 per cent.; large mononuclears, 5 per cent.; transitionals, 3.4 per cent.; eosinophiles, 2.8 per cent. There was no enlargement of the lymph-glands. This patient has been heard from a year subsequent to the removal of the spleen, and he continues well.

Case V. *No malaria; no syphilis; eleven years ago first attack of hæmatemesis; for four or five years recurring attacks of melæna; in* 1892

second attack of hæmatemesis; an occasional attack of melæna; January, 1898, severe hæmatemesis and melæna; great enlargement of the spleen; marked anæmia of the chlorotic type—A. B., aged thirty-eight years, of Durham, N. C., admitted to Ward C, on November 10, 1898, complaining of hemorrhages from the stomach. In this very remarkable case the hemorrhages have recurred for nearly twelve years, as I have heard within a few weeks (November, 1899) that he has had another severe attack. He had been persistently pale for many years. The blood on admission gave hæmoglobin 30 per cent.; red blood-corpuscles, 4,000,000; leucocytes, 6500 per c.mm. Differential count: polymorphonuclears, 73; small mononuclears, 10; large mononuclears, 12; transitionals, 3; eosinophiles, 2.

Cases III., IV., and V. have been reported in full in the *Edinburgh Medical Journal*, May, 1899.

Case VI. *Hæmatemesis and melæna in April*, 1898; *enlarged spleen; second attack of hæmatemesis in October*, 1889; *swelling of abdomen and feet; melanoderma.*—W. H., aged twenty years, admitted to Ward F, January 14, 1890, complaining of swelling of the abdomen.

Family History. Mother died, aged forty-six years, of disease of the lungs; father died at thirty years, cause unknown; one brother has had malarial fever.

Personal History. Until 1887 he lived at Centreville, Md., which is in a malarial district. For the past five or six summers he has had attacks of what was called bilious fever, with vomiting for a few days, but no jaundice or pain. The first attack was the most severe, and in it he became very pale and sallow, and had œdema of the legs. He does not think he has ever had malaria; he is sure that he has never had ordinary ague.

In April, 1889, after feeling wretchedly for a month, he vomited a good deal of blood, and passed dark blood in the stools. He was in bed at this time for three or four weeks. In May there was first noticed an enlargement in the left side of the abdomen. In June the patient applied at the out-patient department, complaining of uneasy feelings in the abdomen, headache, and weakness. At that time the spleen was noticed to be very large, and the notch was distinctly felt. He got better throughout August and September, and was able to work for three weeks. Early in October he had a second and more severe attack of vomiting of blood. This recurred on three successive days. It was dark-colored, and the stools again became bloody as before. He had slight fever, headache, and increasing swelling of the abdomen and of the feet.

On admission the patient had a very remarkable mottling of the face, with brown pigment. There was a good deal less pallor than when he was seen in June. There was a general brownish discoloration of the skin everywhere; no pigmentation of the mucous membranes. The conjunctivæ were very pearly. The examination of the abdomen showed a greatly enlarged spleen, which toward the middle line reached to within an inch and a half of the umbilicus, and below to within three inches of the crest of the ilium. It was smooth and not painful. The liver was not enlarged. The superficial lymph-glands were not enlarged.

Blood. On admission, January 14th, the red blood-corpuscles were

2,187,000; leucocytes, 12,497. There were no microcytes, no poikilocytosis. He was placed upon Fowler's solution, and he improved rapidly. The color got better, and on January 23d the red blood-corpuscles had risen to above 3,000,000. He progressively improved, and on February 5th the red blood-corpuscles were 3,912,500 and the leucocytes 18,720. He left the hospital on March 24th greatly improved, his weight having risen from 140 pounds on admission to 154 pounds. While in the hospital he had slight fever—99° to 100°, and it once rose to 102°. I have not been able to learn the subsequent history of this case.

CASE VII. *Residence in a malarial district; no attacks; no syphilis; progressive enlargement of the spleen, with anæmia; melanoderma.*—W. R., aged forty years, of Port Antonio, Jamaica, referred to me on May 18, 1895, by Dr. Henderson, of Kingston.

Personal History. A native of Jamaica, he had malaria when a boy, and has lived in Port Antonio and the neighborhood for some years (which is a very malarial district), but has never had chills or fever, and has never been laid up in bed. He has at times had slight feverish attacks. He has not had syphilis.

The present trouble dates from about two years ago, when he began to get pale and lost his weight—from about 165 to 148 pounds. He has worked steadily until April of this year, when he consulted Dr. Henderson, of Kingston. The doctor writes that he found him suffering from anæmia, with considerable enlargement of the liver and great increase in the size of the spleen, which came down nearly to the iliac crest, and extended inward to within one inch and a half of the umbilicus.

Present Condition. Patient was remarkably bronzed on the face and hands, and there was a diffuse pigmentation of the whole skin. The mucous membranes were not anæmic; not pigmented. There was an old scar on the left ankle, and a small fresh abrasion on the right shin, in the neighborhood of these there were remnants of extensive fresh hemorrhages; a similar very large one existed over the dorsum of the left foot. He said there had been recurring hemorrhages in the skin of the legs. The pulse was steady and strong—80 to the minute. The heart-beat was in the fourth interspace; the sounds were everywhere clear.

The abdomen was prominent. An enormous spleen occupied almost the entire left side, extending to within three finger-breadths of the pubes and about two finger-breadths beyond the middle line, just below the navel. The lower and anterior borders were felt readily; the notch was just at the navel. The surface was smooth; pressure was not painful. The flatness extended to the upper border of the eighth rib in the mid-axillary line. The liver was not so much enlarged as at the time of Dr. Henderson's examination. It extended only two finger-breadths below the costal margin in the nipple line.

Blood count (Dr. Thayer): red blood-corpuscles, 4,816,000; white blood-corpuscles, 5000; hæmoglobin, 55 per cent. There were no nucleated red blood-corpuscles; there was no poikilocytosis. The large mononuclear elements were more numerous than the small; the eosinophiles were also slightly increased.

CASE VIII. *Recurring attacks of diarrhœa; tumor in the left side noted three years ago; no hemorrhages; progressive anæmia, with greatly enlarged spleen.*—Mrs. Phœbe N., aged fifty-six years, admitted on

October 15, 1896, complaining of diarrhœa and swelling of the abdomen. There was nothing of any moment in her family history. She has had six children; has always been very well and strong. She has not had malaria.

She dates her present illness from three years ago, when, after an attack of diarrhœa, she noted a swelling in the left side beneath the costal margin. From the onset she noticed that her color was bad, of a grayish-brown, unhealthy tint. The diarrhœa had been a very persistent feature in her case, and she had to exercise the greatest caution in diet, and sometimes had as many as six to twelve greenish-watery stools in the twenty-four hours. She has never passed any blood or mucus. There had been intervals of from one to three weeks when the diarrhœa would stop entirely. The tumor which she had felt in her left side had increased, and it caused a dragging, uneasy sensation. She has had no hemorrhages, no œdema, no ascites.

Present Condition. The patient was a small woman, not specially emaciated, but of a very pale, gray, pasty-brown color; mucous membranes pale; tongue slightly coated; no special pigmentation. There were hæmic murmurs at the base of the heart.

The abdomen presented a marked prominence on the left side and a bulging just to the left of the umbilicus. This area was occupied by a large solid mass, with sharp border and two well-defined notches, one above the navel and one a little to the right and below. The whole mass was readily movable on bimanual palpation. On percussion the flatness extended from the sixth rib in the nipple line.

Blood. Hæmoglobin, 60 per cent.; red blood-corpuscles, 3,600,000; white blood-corpuscles, 3000 per c.mm. There was a slight poikilocytosis; the corpuscles looked pale. No nucleated red blood-corpuscles. A differential count of the leucocytes gave: polynuclears, 66; small mononuclears, 25; large mononuclears, 7; transitionals, 2; eosinophiles, 1.

The feces were of a greenish-brown color, contained no blood, no mucus, no parasites, no ova of parasites. They were repeatedly examined.

The patient remained in the hospital until October 21st. She improved; the red blood-corpuscles rose to 4,300,000, hæmoglobin 60 per cent., leucocytes 6000 per c.mm. There was no change in the differential count of leucocytes. The urine had a specific gravity of 1022; contained no tube-casts or albumin. The patient had no fever during her stay in the hospital.

Case IX. *Chills and fever when a child—febrile attacks in* 1892, *six years before death, in which enlargement of the spleen was noticed; gradual anæmia; in May,* 1895, *ascites; recovery; in May,* 1897, *again ascites; recovery; progressive anæmia; greatly enlarged spleen; early in* 1898 *again ascites; repeated tappings; death; spleen enormously enlarged; no cirrhosis of the liver.*—D. S. C., aged fifty-eight years, a physician from Illinois, consulted me on October 29, 1897, complaining of anæmia and an enlarged spleen. He had had chills and fever as a child of seven, inflammatory rheumatism at ten years of age. In 1872 had a bad attack of erysipelas. He has been a temperate man and a very hard worker.

The present illness began in the winter of 1892–1893 with a fever, which recurred at intervals for six weeks, but which seemed to be

checked easily with doses of quinine and atropine. He did not feel very ill and kept at work. Toward the end of this attack there was a slight swelling and redness of the right ankle. He noticed now for the first time that the spleen was enlarged, but it was not very prominent. In 1893 and 1894 "he worked along," not feeling very robust, and he thinks that the spleen continued enlarged all this time. In May, 1895, he became very anæmic and weak, and, not improving through the summer, he gave up work for eight months. In this attack, in addition to the anæmia and enlargement of the spleen, he had ascites. In January he felt better and went home and began work again, and continued to practice during the winter of 1896-1897. He says the spleen was at this time enlarged. In May of that year he again became very anæmic and pale, and took much iron and arsenic. The abdomen also became swollen, but was not so large as in 1895, and he had œdema of the feet; both disappeared. The blood count, which he had made at that time, showed 4,400,000 red blood-corpuscles; 5100 white blood-corpuscles per c.mm.

Present Condition. He looked a little pale, was not specially emaciated. Tongue was of good color, pulse of good volume, superficial bloodvessels not specially full.

The abdomen was large and the navel projected, and to the left of it there was a very marked prominence, which descended with each inspiration, and in it a distinct notch could be seen. A second prominent mass was seen just below the left costal margin. On palpation these two masses were found to be continuous, evidently a very greatly enlarged spleen, firm and hard, with rounded edges; the notch, which was visible, could be readily felt. The edges were singularly rounded; the surface was smooth. The edge of the liver could be felt just two finger-breadths below the costal margin outside the right rectus. The outlines on percussion did not show any enlargement. There was a small ecchymosis just to the left of the navel; the superficial veins were not distended; the superficial glands were a little enlarged.

Blood (Dr. Futcher): moderate poikilocytosis, slight increase in the average size of the red corpuscles, a few microcytes and macrocytes, apparent diminution in the number of leucocytes. Blood count: red blood-corpuscles, 4,788,000; white blood-corpuscles, 5200; hæmoglobin, 60 per cent. The percentage of the different leucocytes was as follows: Small mononuclears, 52; large mononuclears, 2; transitionals, 4.8; polynuclears, 40; eosinophiles, 1.2. In stained specimens the same poikilocytosis was noted, and variations in size, as in the fresh specimens. There were no nucleated red blood-corpuscles.

On January 4, 1898, the swelling became so great that he had to be tapped, and an enormous quantity of fluid was withdrawn. The operation was repeated again in four weeks. Early in February he had a very severe attack of sciatica, hiccough developed, and he became greatly enfeebled. He sank gradually, and died on the 12th of February. The spleen was enormously enlarged. There was no cirrhosis of the liver.

CASE X. *Residence in a malarial region; occasional attacks of chills and fever; chancre, no symptoms; progressive weakness and anæmia; epilepsy for years; greatly enlarged spleen; anæmia; melanoderma.*— Cornelius B., aged thirty-nine years, of Port Royal, S. C., admitted to Ward C, June 15, 1898, complaining of epilepsy, hemorrhages, and progressive weakness. There was nothing of any moment in his family

history. He has always lived in a malarial district, and nine years ago had two congestive chills, and following this for three years he had occasional attacks of malarial fever. He had gonorrhœa ten years ago, and a non-indurated sore three years ago, not followed by symptoms. For five or six years he has had hemorrhoids. He is a moderate drinker. He has had epilepsy for nearly eighteen years; the attacks now recur about once a month. The patient has been growing progressively weaker for the past six or eight months. He has never noticed anything in the abdomen. He came to consult me, complaining of epilepsy and a nervous breakdown.

Present Condition. His face had a sallow look, which he attributed to his occupation, as he had been out in the open air fishing a great deal. The lips and mucous membranes had a good color. The general surface of the skin had a slight degree of dark brownish pigmentation, with here and there little patches of leucoderma. His weight was 138 pounds. He had no fever, and the pulse was of good volume, 92 per minute. The superficial lymph-glands were easily palpable, perhaps in places a little enlarged. With the exception of a soft apex systolic murmur there was nothing of note in the examination of the chest.

Abdomen. The spleen was greatly enlarged, reaching 7 cm. below the costal margin in the parasternal line. Above the flatness began in the sixth interspace; anteriorly the margin could be felt close to the navel. The edge was sharp, easily felt, the surface smooth and painless. The liver flatness began at the fifth space in the nipple line, and extended 3½ cm. below the costal margin, 12 cm. in vertical extent. The edge of the organ was distinctly palpable and felt normal.

Blood. A fresh specimen showed considerable poikilocytosis, with megalocytes and microcytes; no nucleated red corpuscles were seen. There were no malarial organisms and no pigment. Blood: red blood-corpuscles, 4,128,000 per c.mm.; white blood-corpuscles, 2800 per c mm.; hæmoglobin, 45 per cent.

The urine was of a low specific gravity, 1010 to 1014; there were no tube-casts, no albumin.

The patient remained under observation for two weeks, during which time he improved, and was then transferred to the surgical side for operation on the hemorrhoids.

An interesting point was the fact that this patient did not know that his spleen was enlarged. He had had no treatment, and consulted me for the epilepsy.

Case XI. *In* 1891 *obscure abdominal attack, thought to be peritonitis; color not good since; April,* 1898, *spleen found to be greatly enlarged; progressive anæmia; persistent enlargement of the spleen; stone in the bladder; operation; death.*—J. K. E., aged fifty-seven years, seen early in September, 1898, with Dr. Graham, of Toronto, and he was under my subsequent care through January and February, 1899. The patient has always been a strong, healthy man, high-strung and nervous, actively engaged in political and legal work. His habits have been good; he has taken alcohol in moderation; has never been what would be termed a heavy drinker. In 1891 he had an obscure abdominal attack, the nature of which was never very clear. His doctor at that time thought it was possibly peritonitis. He does not think that he has ever been quite the same since, particularly in the matter of color, though he has of late years been able to attend to a great deal of work. In the early

part of 1898 his wife and others noticed that he was becoming very pale, and in April he discovered that he had a lump in the left side of the abdomen. The first blood count was made in June by Dr. Harold Parsons, when the hæmoglobin was found to be 37 per cent. and the red blood-corpuscles somewhat under 2,500,000; the leucocytes were normal. Throughout the summer he did not do well. The pallor persisted; he had a little swelling of the feet, and he also had dyspepsia. In August, a little before I saw him, he had 45 per cent of hæmoglobin, and the corpuscles were rather more than two millions and a half; leucocytes normal. In September, when I examined him with Dr. Graham, the pallor was marked; he had lost about fifteen pounds in weight The spleen was considerably enlarged, extending more than a hand-breadth below the costal margin. The superficial glands were not enlarged; liver was not enlarged. Dr. Graham regarded the case as one of anæmia splenica, in which opinion I concurred. All through the summer he had at intervals attacks of slight fever; sometimes the temperature would go as high as 101°; more frequently it would be an afternoon temperature of 100°.

On admission to the private ward there was no special change since I saw him in September; no loss in weight. Pulse was 72, regular, good tension. The abdomen looked full in the left flank and under the left costal margin. The spleen extended to about the level of the navel, to the right about three finger-breadths from the middle line; it felt round and firm; the notches were not distinct. It extended deep in the flank below the level of the anterior superior spine. The edge of the right lobe of the liver was readily felt just below the costal border on deep inspiration; left lobe of liver could also be felt two finger-breadths below the ensiform cartilage. There was no enlargement of the superficial lymph-glands.

Repeated very careful blood counts were made in this case by Dr. McCrae through January and February. The hæmoglobin was at about 40 per cent. It rose on February 10th to 50 per cent. On January 15th and 29th it was 40 per cent The red blood-corpuscles were 3,328,000 per c.mm. on the 15th, and they had gained only a few hundred thousand on February 10th. The highest leucocyte count was 4000 per c.mm. on February 4th. On January 29th it was 2000. The differential count was as follows: Polynuclear, 78; small mononuclear, 6; large mononuclear, 13; transitional, 2.5; eosinophiles, 0.5 per cent. There was no poikilocytosis, but an occasional nucleated red blood-corpuscle was seen.

The patient improved somewhat through the spring, then symptoms of stone came on. Death followed the operation of lithotomy.

Case XII. *Dyspepsia for many years; July* 9, 1899, *profuse hemorrhage from the stomach, again on the* 16*th and* 26*th; marked anæmia; ascites; paracentesis; greatly enlarged spleen.*—L. F. W., aged forty years, was referred to me on October 18, 1899, by Dr. Moran, of Roxbury, Mass. Up to eight years ago he was a very healthy man. He had not had malaria. No history of syphilis. Had been a temperate man. For the past eight years he had had dyspepsia, and on several occasions had vomited. He had had no pain, and had kept at work. During the first week of July of this year he did not feel very well; then on the evening of July 9th he had a profuse hemorrhage from the stomach, in which he brought up, he says, four quarts in three separate

attacks. On the 16th he had a second hemorrhage, and on the 26th two more, one of which was very severe. Naturally the bleeding was thought to come from an ulcer, and he was kept very quiet and had rectal feeding for many weeks. He gradually began to improve, although he was very weak and debilitated. The abdomen became progressively larger, owing to dropsy, and he was tapped about five weeks ago, and six quarts of fluid drawn off. On his way to join relatives in Baltimore he consulted Dr. Vickery, of Boston, who found a greatly enlarged spleen.

Present Condition. He was not emaciated; still looked pale. The abdomen was full, and under the left costal border there was a slight prominence. On palpation the spleen was found to be greatly enlarged, the lower border extended exactly to the level of the navel. Anteriorly it reached to the parasternal line. The border could be distinctly felt. The liver was not enlarged. The ankles were not swollen. There was a soft hæmic murmur over the base of the heart. There were no retinal hemorrhages.

Blood. Hæmoglobin, 45 per cent.; red blood-corpuscles, 4,208,000; white blood-corpuscles, 4000 per c.mm. A differential count of 300 white blood-corpuscles gave: polynuclears, 65.6 per cent.; small mononuclears, 15 per cent.; large mononuclears, 12.6 per cent.; transitional, 3.3 per cent.; eosinophiles, 3.3 per cent.; no nucleated red blood-corpuscles or myelocytes were seen.

Case XIII. *Failing health; vomiting and diarrhœa; profound anæmia; greatly enlarged spleen; rapid improvement under treatment.*—Mrs. C., aged forty-four years, colored, laundress, admitted to Ward O, on October 12, 1899, complaining of great weakness, nausea, and vomiting. Her husband died of tuberculosis. She has three children, one now tuberculous. She has had the usual disorders of childhood; has never had typhoid fever or malaria. She has had no miscarriages. She has had indigestion all her life; has been a hard-working woman, and has had to support her children for many years.

Present Illness. For the past three months she has been failing in health; has had loss of appetite, progressive weakness, and for the past six weeks much nausea, vomiting and diarrhœa. She gave up work about September 1st, and has been in bed ever since. She has felt giddy at times, and her eyesight has been dim. She has lost about fifteen pounds in weight. She has been short of breath on the slightest exertion.

She was a slenderly-built, fairly well-nourished, light mulatto woman; the mucous membranes very pale. There were all the objective features of extreme anæmia.

The abdomen looked full and prominent, particularly in the left half, and the left subcostal groove was obliterated. On palpation a large tumor was felt in the left hypochondriac region, extending into the epigastric region as far as the middle line. The border reached 7 cm. from the left costal margin. The edge was rounded. On bimanual palpation the mass could be grasped between the hands, and the posterior edge could be well felt. The surface was smooth, and there was no pain. There was no friction over it; no bruit. The liver flatness began at the sixth rib, and extended 7 cm. below the costal margin in the nipple line. The edge of the left lobe could be well felt 5 cm. above the navel. The surface was smooth. The superficial lymph-

glands were not enlarged. The posterior cervicals were perhaps a little larger than normal. No retinal hemorrhages.

Blood. Hæmoglobin, 23 per cent.; red blood-corpuscles, 1,540,000; white blood-corpuscles, 3300. Differential count of 300 leucocytes gave: polymorphonuclears, 74; small mononuclears, 19.6; transitionals, 2.6; large mononuclears, 1.6; cosinophiles, 1.5; myelocytes, 1.5; forty-five nucleated red blood-corpuscles were met with in counting 300 leucocytes, thirteen of which were megaloblasts. (Miss Reed.)

On October 17th a blood count was made by Dr. McCrae. Hæmoglobin, 20 per cent.; red blood-corpuscles, 1,380,000; white blood-corpuscles, 3250. Differential count showed no special changes from that previously noted. In 400 leucocytes there were 1.25 per cent. myelocytes. In counting the 400 leucocytes there were 75 nucleated reds, 21 of which were normoblasts, 19 megaloblasts, and 35 intermediate. Three was very marked poikilocytosis. There were some enormous nucleated red blood-corpuscles 12 x 15 microns in diameter.

The patient was kept in bed, had a good diet, was put out of doors every day, and given arsenic and iron. She improved with great rapidity, gaining in weight and in strength.

A very careful study of the blood was made in this case by Miss Reed, and counts were taken twice a week. On November 10th the following: Hæmoglobin, 55 per cent.; red blood-corpuscles, 3,120,000; leucocytes, 4500. No nucleated red blood-corpuscles were seen. The most remarkable change was in the reduction of the size of the spleen, the edge of which was now felt 5 cm. from the middle line. She had increased in strength, her color was good, and she had gained thirteen pounds in weight.

The patient was discharged November 20th. The hæmoglobin was 54 per cent.; red blood-corpuscles, 3,680,000; white blood-corpuscles, 4300.

CASE XIV. *Enlarged spleen; anæmia of chlorotic type; recurring attacks of hæmaturia; melanoderma; diarrhœa.*—E. W. S., aged thirty-five years, lawyer, of West Virginia, seen with Dr. Thayer and admitted to Ward C, October 31, 1899.

His family history was good. When fifteen years old he had typhoid fever, and following it a great deal of rheumatism. At eighteen he had a primary sore, followed by pharyngitis and skin rash. He was very thoroughly treated. He is married and has three healthy children.

Until five years ago he was well. In the summer of 1894 he had an attack of diarrhœa, which lasted on and off for several weeks, and at this time he first noticed a sallowness of the complexion, and he had itching of the skin. In the following summer he had a return of the diarrhœa, but less intense, but with it the itching of the skin returned. He does not think that he was jaundiced. In the summer of 1896, while electioneering, the diarrhœa returned, and persisted on and off through the winter and spring, and through the summer of 1897. Then until July, 1898, he was quite free from it. He then had it for nearly four months. Last winter he was well until March, when the old trouble began, and since then he has lost forty pounds in weight. During these five years the movements have always been the same, watery at first, followed by much mucus, and at the end of the movement a little fresh blood. Parasites have been carefully looked for by Dr. Thayer on several occasions.

In the intervals between the attacks of diarrhœa he regained strength

quickly. The sallowness year by year became more marked. During the past summer for the first time he had three attacks of hæmaturia, each one followed by colic; no rigor; no fever. He was considered to have malaria, and given quinine. He had no hemorrhages from the stomach or bowels. He has never lived in a malarial region; has never had a chill. He had taken much arsenic during his illness.

Blood. Hæmoglobin, 55 per cent.; red blood-corpuscles, 3,856,000; white blood-corpuscles, 4500. Differential count: Polymorphonuclears, 73.7; small mononuclears, 14; large mononuclears, 8; transitionals, 3.3; eosinophiles, 1. No nucleated reds, no myelocytes. In the fresh specimen the red blood-corpuscles looked rather pale, slight poikilocytosis, numerous endoglobular degenerations; no malarial parasites.

The pigmentation of the skin was fairly uniform on the face. On the trunk it was deepest in the groins and flanks, the folds of the arms and in the axilla. There was some roughness of the skin and ankles; no nodes.

Abdomen. A prominent mass below the left costal margin descended with inspiration, reaching almost to the navel. On palpation this corresponded to a greatly enlarged spleen. The notch was not very distinct. The splenic dulness began at the upper border of the seventh rib. There was no enlargement of the lymph-glands. The liver was slightly enlarged. In the parasternal line it could be felt 6 cm. below the costal border. The edge could be felt. He had had no pain in either liver or spleen. The heart and lungs showed no special signs. The stools contained fatty débris and a few small blood clots; no parasites. There was no fever.

The patient remained in the hospital until November 23d. He was out of doors, in bed, all day, and improved rapidly. The diarrhœa stopped; he took his food, and seemed very comfortable.

On November 16th: hæmoglobin, 60 per cent.; red blood-corpuscles, 3,692,000; white blood-corpuscles, 3500 per c.mm. The spleen seemed to have reduced somewhat in size.

On November 19th he had an attack of hæmaturia which continued for nearly thirty-six hours; no pain. He passed several long clots. On the morning of November 21st the urine was perfectly clear.

The patient left on the 22d. There was no essential change in the condition of the blood. The hæmoglobin was between 55 and 60 per cent. No nucleated red blood-corpuscles were seen at any time. A portion of skin was excised in this case. The pigment was distributed in the cells of the corium and in the subcutaneous tissue. It gave no iron reaction.

Case XV. *Recurring hemorrhages from the stomach in* 1891 *and* 1892; *some abdominal pain; enlarged spleen; anæmia.*—John F., Pennsylvania farmer, aged forty-three years, was seen on November 18, 1899, complaining of pains and uneasy sensations in the abdomen. He was at the hospital on October 8, 1895.

His family history was good. His personal history was excellent. He had had typhoid fever twenty years ago. He was a temperate man; said that he did not drink at all. Has not had syphilis. He has had psoriasis from his eighteenth year. He had fever and ague in 1885 when in Ohio. For two or three years he has had dyspepsia.

About Christmas, 1891, he vomited a large quantity of blood, as much as half a gallon. On January 1, 1892, he had a second hemor-

rhage, again bringing up about half a gallon. These attacks left him very anæmic and exhausted. In August, 1892, he had two profuse hemorrhages from the stomach, six days apart. At that time a lump was noticed in the abdomen.

At his first visit, in 1895, he was examined by Dr. Thayer, who found a spleen which reached 10 cm. below the costal margin, and in which two notches could be felt. The liver-dulness began on the seventh rib, and the vertical area seemed reduced. The border of the liver could be felt below the costal margin.

November 18, 1899. The patient returned to-day for the first time. He has remained in good condition, has never had any return of the hemorrhages, but has had more or less uneasiness in the abdomen, sometimes pain in the left side. He was robust, well nourished, looked a little pale. The abdomen was protuberant. There was no pigmentation of the skin. On examination the left side of the abdomen looked prominent, and on palpation the spleen was felt extending into the umbilical region, to within an inch of the navel, and below reaching nearly to the crest of the ilium. The notches could be plainly felt. It was not painful. The liver seemed slightly reduced in volume since the first examination. The edge, which could be felt, appeared normal. The blood examination showed: Hæmoglobin, 45 per cent.; red blood-corpuscles, 4,270,000; leucocytes, 2500. Differential count: Polymorphonuclears, 80.3; small mononuclears, 8; large mononuclears, 4; transitionals, 2; eosinophiles, 5; mastzellen, 6.

From a study of this series I find nothing to throw light on the nature or origin of the anæmia, which remains quite as obscure as in pernicious anæmia, as in the latter disease males appear to be more frequently affected than females—twelve to three in this series. With one exception all of the cases were in adults above the age of thirty-five. The youngest was a girl of eleven years. Three of the patients were above fifty years of age. Four patients had had malaria. Case IX. had chills and fever when nine years old. Only in Cases VII. and X. is this disease a possible factor, as the patients had lived all their lives in very malarial regions. Locality has nothing to do with the number of cases here reported. Only four of the patients were natives of Maryland; three came from Canada, and the others from various States. Two of the patients had had syphilis. In four dyspepsia was a special feature, and in two there had been recurring attacks of diarrhœa of great severity.

Clinical Features. Before referring to these we may speak of one of the most interesting points brought out by this series—namely, the long duration of the affection. Samuel West, in the article on "Anæmia Splenica" in Allbutt's *System*, states that the disease is not of long duration—from six months to two years. In several of the cases the symptoms had lasted more than five years. Case V. has probably had the condition for at least twelve years, and in Case XV. the spleen was as much enlarged four years ago as it is now.

The Spleen. In all the enlargement of the spleen appears to have

preceded the anæmia. The patient suffered no inconvenience from it, and, as a rule, until discovered by the physician, did not know of its existence. In one case there were recurring attacks of pain in the region of the spleen. In all the spleen was large, reaching nearly to the navel, but only in Case VII. was it of maximum size, equalling the largest spleen of leukæmia. No case presented any difficulty in the diagnosis of the character of the tumor in the abdomen.

Hemorrhages. I have already called attention to the remarkable attacks of hæmatemesis in cases of enlarged spleen, whether simple or in leukæmia.[1] In the series here reported eight had hemorrhage from the stomach, and usually after it malaria. In seven cases this was the feature for which the patients sought relief. In Case V. the hemorrhages have recurred over a period of twelve years. Watson's explanation of the hæmatemesis in enlarged spleen is probably the most correct. "The stress of the congestion is continually felt in the submucous capillary system, and the hemorrhage, which is apt in such cases to occur from the loaded membrane, receives a simple solution upon principles almost purely mechanical." The vasa brevia, passing from the fundus, which empty into the splenic vein, drain a large section of the stomach. From estimates of Mall and Krauss 40 per cent. of the blood of the splenic artery goes to the stomach, so that one may reasonably conclude that a similar percentage of blood in the splenic vein is derived from that organ. The amount of blood brought up may be enormous, and the patient may be rendered exsanguine. Only in Cases I. and III. did the fatal termination follow hemorrhage. In a majority of the cases the diagnosis of ulcer of the stomach has been made. Hæmaturia occurred in Case XIV. It was probably not connected with stone, as it never came on with colic, but on several occasions was followed by pain and the passage of moulds of the ureter. Case VII. had on several occasions purpuric attacks.

Ascites, which was present in three cases, may be due, as in leukæmia, directly to the enlarged spleen, or it may be in part associated with the anæmia. It is important to bear in mind that ascites does not necessarily indicate cirrhosis of the liver. In Case IX. the patient had three severe attacks of ascites, and the liver at autopsy showed no trace of cirrhosis.

Lymphatic Glands. In no case in the series were the external lymphatic glands specially enlarged.

Anæmia. The patient may present only a very slight pallor, but there may be all grades of anæmia to a form as intense as that met with in progressive pernicious anæmia (Case XIII.). At least one-half of the patients when they came under observation did not present the

[1] Canada Medical and Surgical Journal, vol. xl., and Edinburgh Medical Journal, May, 1899.

objective features of a very profound anæmia. One of the most striking features on first inspection was the melanoderma, which was present in six cases. In Case VII. the pigmentation was as dark as in the most advanced cases of Addison's disease. In Case XIV. a portion of the skin was examined and showed none of the ochre-brown pigment of hæmachromatosis. In some of the cases the pigmentation may have been arsenical.

Blood. The following are the most striking features of the blood in this series:

1. The relatively high blood count: Of the fourteen cases the corpuscles ranged above 4,000,000 per c.mm. in six cases; between three and four millions in three; under three millions in four, and below one million in only one case. The average blood count of the fourteen cases was 3,336,357 red blood-corpuscles per cm.

2. The relatively low hæmoglobin: The estimate was not made in four cases; in the remaining eleven the ratio of hæmoglobin to corpuscular richness was low. In Case XIII. the hæmoglobin was 23 per cent., with the corpuscles above 30 per cent.; and in Case IV. the hæmoglobin was 25 per cent., with corpuscles at 60 per cent. Of the six counts in which the corpuscles were above four millions (80 per cent.) the hæmoglobin was 45 per cent. in three, 30 in one, 55 in one, and 60 per cent. in one.

3. The low leucocyte count: Of the thirteen cases in which the leucocytes were estimated there were nine with white blood-corpuscles below 5000 per c.mm. In six cases extreme leukopenia existed. In one case the count was 12,497.

The following table gives the result of the blood examinations in the series:

Case I.—Hæmoglobin, — per cent.; red blood-corpuscles, 2,000,000; white blood-corpuscles, —.

Case II.—Hæmoglobin, — per cent.; red blood-corpuscles, 2,250,000; white blood-corpuscles, 7120.

Case III.—No count.

Case IV.—Hæmoglobin, 25 per cent.; red blood-corpuscles, 3,000,000; white blood-corpuscles, 2800.

Case V.—Hæmoglobin, 30 per cent.; red blood-corpuscles, 4,000,000; white blood-corpuscles, 6500.

Case VI.—Hæmoglobin, — per cent.; red blood-corpuscles, 2,187,000; white blood-corpuscles, 12,497.

Case VII.—Hæmoglobin, 55 per cent.; red blood-corpuscles, 4,816,000; white blood-corpuscles, 5000.

Case VIII.—Hæmoglobin, 60 per cent.; red blood-corpuscles, 3,600,000; white blood-corpuscles, 3000.

Case IX.—Hæmoglobin, 60 per cent.; red blood-corpuscles, 4,788,000; white blood-corpuscles, 5200.

Case X.—Hæmoglobin, 45 per cent.; red blood-corpuscles, 4,128,000; white blood-corpuscles, 2800.

Case XI.—Hæmoglobin, 37 per cent.; red blood-corpuscles, 2,500,000; white blood-corpuscles, 3000.

Case XII.—Hæmoglobin, 45 per cent.; red blood-corpuscles, 4,208,000; white blood-corpuscles, 4000.

Case XIII.—Hæmoglobin, 23 per cent.; red blood-corpuscles, 1,540,000; white blood-corpuscles, 3300.

Case XIV.—Hæmoglobin, 55 per cent.; red blood-corpuscles, 3,856,000; white blood-corpuscles, 4500.

Case XV.—Hæmoglobin, 45 per cent.; red blood-corpuscles, 4,270,000; white blood-corpuscles, 2500.

Some additional points may be referred to.

Red Blood-corpuscles. Poikilocytosis was present in five cases. Marked endoglobular degeneration was noted in two cases. Nucleated red blood-corpuscles were met with in two cases; in Case XIII. in enormous numbers, both normoblasts and megaloblasts.

White Blood-corpuscles. As already mentioned, marked leukopenia was present in six cases. Differential counts of the leucocytes were made in ten of the cases. In the following cases there were changes in the proportion of the large and small mononuclears; in Case VII. the large mononuclears were more numerous than the small; in Case VIII. the small mononuclears were 25 per cent; in Case IX. the small mononuclears were very high, 52 per cent.; in Case XIII. the small mononuclears were 19 per cent.; in Case XIV. the small mononuclears were 14 per cent. Altogether there was nothing in the differential count of any special moment or significance.

Diagnosis. I have considered in this series only cases which presented idiopathic enlargement of the spleen (primitive splenomegaly) with anæmia and without enlargement of the lymph-glands. In this locality enlargement of the spleen from malaria is exceedingly common, and it will be noted that there is no case included which could be called paludal cachexia. I have not included a few cases of idiopathic enlargement of the spleen in persons who appeared perfectly healthy and in whom this was found accidentally, or in whom the organ was enlarged and dislocated. Two cases presenting this latter condition have been operated upon by my colleague—Halsted—who packed the spleen into position with gauze. Both were seen more than two years subsequent to the operation, and had remained perfectly well. In a third case, a young woman with an enlarged and floating spleen had a twist of the pedicle with necrosis of the organ and intense splenitis. Dr. Halsted operated, scraped out a large quantity of necrotic material, and she made a good recovery.

The following conditions are those in which there has been in my experience a difficulty in the differential diagnosis.

(*a*) From *pernicious anæmia.* In Case XIII., for example, in which the spleen was very large, reaching to the navel, there were three points

very suggestive of pernicious anæmia—namely, the very low blood count, the extraordinary number of nucleated red blood-corpuseles, and the remarkable way in whieh the blood improved and the spleen reduced in size under the use of arsenic, iron, good food, and fresh air. While sometimes a little enlarged, the spleen in pernicious anæmia is more commonly small, and I do not remember ever to have seen it so large as in Case XIII. A relatively low hæmoglobin percentage is rare in this disease. Another ease, in which there was a doubt, was a Mr. C., aged sixty-one years, admitted July 6, 1892. He had a profound anæmia (under 1,000,000 per e.mm.), and the spleen was three finger-breadths below the costal margin. He had at first a slight leucocytosis and a remarkable inerease in the number of lymphoeytes, without any special sign of lymphadenitis. Two weeks before his death the condition changed from one of anæmia to that of leukæmia, and in a count of 1000 leueocytes there were 841 lymphocytes.[1] This was probably an anomalous case of leukæmia. It was very thoroughly studied by Dr. Thayer and Dr. Barker, who will subsequently publish the casein detail.

(*b*) From certain cases of *splenic leukæmia.* There are eases of splenie leukæmia in which the leueoeytes gradually diminish and remain at the normal number for protracted periods. In my text-book I give a ehart of a case, in which, from February 6th to the end of April, the leukæmia had disappeared. For the greater part of the time there was leukopenia. The myeloeytes, however, were still present, and from them a suggestive diagnosis, at least, might have been made. Bennet also refers to a case of this kind in his clinieal lectures.

A very remarkable case eame under observation in September, 1898. The patient at the time presented the features of a splenic anæmia, while a few months previously leukæmia had been diagnosed. As the case will be reported in full by Dr. McCrae, I shall give only the briefest abstract. Man, aged twenty-eight years, never very strong, but of good habits; no malaria or lues. He came complaining of weakness and of swelling of the abdomen. During the summer he had been under the care of Dr. Liehty, who had diagnosed a splenomyelogenous leukæmia. The hæmoglobin was 45 per cent., the reds about 50 per cent., and the leucoeytes 1 to 4. He had improved very rapidly, and when he first came under our observation the leucocytes were only 9250 per e.mm. The spleen was greatly reduced in size, and there were no nucleated reds, no myelocytes. Fortunately, Dr. Liehty had kept slides, whieh he was kind enough to send us. The blood was that of an ordinary splenomyelogenous leukæmia. The patient was under observation again in April, 1899, and the leucocytes were only 5000 per e.mm.; hæmoglobin, 70 per cent.; red blood-corpuseles above 5,000,000.

[1] Such cases are exceedingly rare.

(*c*) From cases of *Hodgkin's disease with enlarged spleen.* There is no warrant for the opinion that these cases of anæmia splenica have anything to do with Hodgkin's disease (anæmia lymphatica) from which the clinical picture is very different. Slight enlargement of the spleen is common enough in Hodgkin's disease, but it rarely attains a large size, and I do not remember an instance in which it caused, *per se*, special symptoms.

In not one of the series of cases of which I have notes have the lymphatic glands been enlarged at any stage of the disease. So, also, in splenomyelogenous leukæmia there is rarely any great enlargement of the lymph-glands. In an interesting case, seen recently, the spleen and lymph-glands were enlarged without any anæmia or leukæmia.

William W., aged sixty-four years, referred to me by Dr. Wolfe, of Roanoke, November 13, 1899, complaining of pain in the side and swelling of the lymph-glands. He had not had syphilis; no malaria; was a very moderate drinker. He was a very healthy, robust-looking man for his age. There was general enlargement of all the external lymphatic glands; in the neck they were as large as hazel-nuts. The inguinal groups were uniformly enlarged, as big as cherries; the epitrochlears slightly enlarged. The spleen was three finger-breadths below the costal margin; the edge and the notch were easily felt. The edge of the liver could be felt below the costal margin. It was not specially firm nor painful. The inguinal glands above Poupart's ligament were enlarged. He had had no fever, no sweating. The red blood-corpuscles were 5,500,000, the leucocytes 10,000, hæmoglobin 87 per cent. The differential count by Dr. Thayer of the leucocytes showed a normal relation of the different forms.

(*d*) From *cirrhosis of the liver with enlarged spleen.* Banti has described cases with a triple combination of anæmia, enlarged spleen, and cirrhotic liver. Some of these cases he thinks represent the terminal stage of a splenic anæmia. From the history of recurring attacks of ascites, in Case IX. I thought it possible that the liver was cirrhotic, but the autopsy showed that it was normal. In Case XV., though the patient had been a temperate man, he had a reduced area of liver-dulness, and when we examined him in November, 1899, we might have laid some stress upon this had not the same condition been noted by Dr. Thayer four years previously, and it is not likely that he would have enjoyed continuous good health and to-day show no signs of trouble with a progressive cirrhosis of the liver. I have no personal knowledge of the interesting condition described by Banti.

There are three varieties of cirrhosis of the liver with which enormous enlargement of the spleen may be associated, and which may lead to doubt in diagnosis.

(*a*) *Alcoholic cirrhosis.* In long-standing cases the spleen may be

enormously enlarged, and if ascites be present, or there have been recurrent hemorrhages, the clinical picture is very like that of primary splenic anæmia. The history, the facies, the more moderate enlargement of the spleen, and the whole course of the disease should enable one to make a diagnosis.

(*b*) *Syphilitic cirrhosis.* Enormous enlargement of the spleen may be secondary to gummous hepatitis, and in children with congenital syphilis this may cause difficulty in diagnosis. The history, the irregularity of the liver, and the more moderate enlargement of the spleen would be the important point. Illustrating the association of anæmia with enlarged spleen in syphilitic liver, there was admitted to my ward in 1891 a girl, aged twenty-three years, with signs of hereditary syphilis. She had trouble in the abdomen eight years ago, since which time it had been enlarged. She had a chronic pleurisy on the right side. When admitted she had fever—temperature 103°. The abdomen was greatly enlarged, and the whole of the left side was occupied by a greatly enlarged spleen. The right epigastric and upper umbilical regions were occupied by a second firm, irregular mass. There was slight enlargement of the lymph-glands. The blood showed: red blood-corpuscles, 2,234,000 per c.mm.; leucocytes greatly increased; a ratio of 1 to 25 red blood-corpuscles; hæmoglobin, 28 per cent. She died four days after admission. There was found a greatly enlarged spleen, measuring 23 x 16 cm., and weighing 1510 grammes; a syphilitic liver, much divided by fibrous bands, and necrotic gummata throughout its substance. The mesenteric and peritoneal lymph-glands were slightly enlarged. This was the largest spleen I have ever seen in cirrhosis of the liver.

Another case was that of C. A. H., aged thirty-four years, admitted December 11, 1897, with anæmia and an enormously enlarged irregular spleen. He had been a very heavy drinker; had a well-marked history of syphilis. Jaundice when seventeen. Three years ago he had jaundice and dropsy, which gradually disappeared. Eighteen months ago he noticed the mass in the left side of the abdomen, and he has gradually been becoming anæmic. Blood on admission: Hæmoglobin, 28 per cent.; red blood-corpuscles, 1,400,000; leucocytes, 7500 per c.mm. The spleen was enormously enlarged and irregular, and the liver could also be felt as an extremely irregular mass in the right hypochondrium. He had several attacks of colic while in the hospital, and was jaundiced. He improved very much, the spleen diminished in size, and he left the hospital with the hæmoglobin at 65 per cent., red blood-corpuscles 3,000,000, leucocytes 8370. In this case the history of syphilis, the previous attack of jaundice, and the irregular condition of the liver left no question, I think, as to the presence of syphilitic hepatitis with secondary enlargement of the spleen.

(*c*) *Hypertrophic cirrhosis.* Hæmachromatosis, that remarkable condition of hypertrophic cirrhosis with melanoderma, enlarged spleen, and diabetes as a terminal phenomenon, may simulate anæmia splenica. The spleen may be very large, and in the later stages ascites and hemorrhages have been noted. Anæmia is not often present, and in two early cases which I have examined the blood count was normal. In young persons there is a non-alcoholic hypertrophic cirrhosis of the liver, with very great enlargement of the spleen, in which, when anæmia exists, it might be difficult to reach a diagnosis. In not one of the fifteen cases here recorded was the liver greatly enlarged.

Doubt has been expressed as to the existence of a separate and distinct disease to which the term splenic anæmia should be given. We do not know whether the anæmia is the result of the enlarged spleen, or whether, as seems more probable, both are secondary to some cause as yet unknown. Provisionally, until we have fuller knowledge, it is useful to group together, as I have done here, cases of idiopathic enlargement of the spleen with anæmia and without lymphatic involvement, and to label the condition splenic anæmia. There are borderland cases difficult to classify, but, on the whole, the composite picture, as obtained by grouping the fifteen cases here recorded, has tolerably definite outlines.

The treatment is that of the severe types of anæmia. Case XIII. illustrates how rapidly improvement may follow under iron, arsenic, sunshine, and good food. In the chronic cases with recurring hemorrhages the question of removal of the spleen should be considered. It was successfully carried out in Case IV., and the patient has remained well for more than a year.

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